

Remarks/Arguments

Applicant requests that the amendment after final not be entered and that the amendments submitted herein be entered in their stead.

Claims 1-23 remain in the application. Claim 8 has been cancelled. Claims 1, 5, 6, 9, 13, 14, 15, 19, and 21 have been amended. New claim 24 has been added.

Telephone Interview

Applicant wishes to thank the Examiner for conducting the telephone interview of June 15, 2004. A complete and proper recollection of the substance of the telephone interview, as follows:

- a) No exhibits were shown nor was any demonstration conducted.
- b) Claims 1, and 4-6 were discussed.
- c) Discussion of the prior art was limited to i) United States Patent 5,160,991 in the name of Delacourt et al., and ii) H.C. Liu, Semiconductor and Semimetals, Vol. 62, pg. 129-196, 1999.
- d) The principle proposed amendments of a substantive nature involved the inclusion of those claim features that are recited in claims 2, 3, and 4 into independent claim 1.
- e) The Examiner maintained the rejection of claim 1 as being anticipated by Delacourt et al. Applicant argued that the teachings of Delacourt et al. are inoperative with respect to operation at other than low temperature. The Examiner also maintained the rejection of claims 4-6 under 35 USC 103 as being unpatentable over Delacourt et al. in view of Liu. Applicant argued that the proposed combination is unmotivated, and that the proposed combination does not teach every feature of the invention as claimed at claims 4-6. Applicant further argued that at the time of the invention, one skilled in the art could not have reasonably expected to successfully produce a quantum well infrared photodetector as claimed at claims 4-6 by combining the teachings of Delacourt et al. and Liu.

- g) No agreement was reached as of the end of the telephone interview.

Amendments to the Claims

Claim 1 has been amended. In particular, claim 1 has been amended to include the claim features recited at claim 4 as originally filed. No new matter has been added in the amendment.

Claim 5 has been amended in order to correct an antecedence error and to correct various typographical and clerical errors. In particular, “the doping density (Nd)” lacked antecedent basis and has been amended to read “a doping density (Nd) of the quantum well layers.” The word temperature was inadvertently omitted after the word operating in claim 5 and has now been added. The term “degrees K” has been amended to read Kelvins, as is generally accepted in the art. The symbol for Planks constant appears as a left-pointing arrow due to a problem associated with our word processing software, and has now been replaced with the correct “h bar” symbol (i.e. \hbar). No new matter has been added in the amendments.

Claim 6 has been amended in order to correct numerous antecedence problems. In particular “the well material,” and “the barrier material” lacked proper antecedent basis. Claim 6 has been amended to recite, “wherein the multi-quantum well structure includes a plurality of barrier layers alternating with the doped quantum well layers.” Accordingly, “the doped quantum well layer material” and “the barrier layer material” have correct antecedent basis. In order to more clearly define the invention, claim 6 has been further amended to specify that the dopant species is Si (examples of support may be found at claim 12 as originally filed, and at page 7, lines 9-11, of the specification as originally filed). Applicant respectfully submits that no new matter has been added in the amendment.

Claim 9 has been amended in order to more clearly define that subject matter which Applicant considers to be the invention. In particular, the features of claim 4 have been included in claim 9. No new matter has been added.

Claims 13-15 have been amended to correct a minor grammatical error. The word "the" was inadvertently omitted in at various places in claims 13-15. No new matter has been added.

Claim 19 has been amended. In particular, as a result of a clerical error claim 19 was originally filed depending from claim 8, whereas in fact it was intended for claim 19 to depend from claim 18. Since all dependent claims in the application as filed depended from the claim immediately preceding it, other than claim 19, Applicant respectfully submits that it should be evident that this is an unintentional error, and no new matter is added in the amendment.

Claim 21 has been amended. In particular, amended claim 21 recites a step of "utilizing the quantum well infrared photodetector of claim 4, detecting infrared radiation absent cryogenic cooling." No new matter has been added in the amendment.

New claim 24 has been added to the application. Applicant respectfully submits that new claim 24 clearly defines that subject matter which Applicant regards as the invention. No new matter has been added.

Applicant looks forward to favourable reconsideration of the present application.

**Please charge any additional fees required or credit any overpayment to Deposit
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Respectfully submitted,



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